

Collaborative Sampling for Cost-Effective Decision Making

Richard O. Gilbert
Staff Scientist
Pacific Northwest National Laboratory
(301) 838-2870
ro.gilbert@pnl.gov

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Decisions concerning the need for or achievement of environmental cleanup or other environment-related decisions often require information obtained by sampling the environment to estimate and test hypotheses about key pollution parameters. This poster focuses on using a cost-effective sampling design called Collaborative Sampling (CS) for obtaining optimal numbers of environmental samples to make decisions. The CS design achieves its effectiveness by combining the use of inexpensive field-based measurement methods with a smaller number of expensive laboratory-based methods. The Visual Sample Plan (VSP) software, which is available for free download from <http://dco.pnl.gov/vsp>, has recently been enhanced to compute the number of inexpensive and expensive measurements needed for CS to be cost-effective compared with the simple random sampling design and the use of only expensive measurements. CS is known to be cost effective if the correlation of the two measurement methods is high and the cost of the inexpensive measurements is sufficiently low. The CS modules in the VSP software were developed in support of EPA efforts (Office of Environmental Information) to provide guidance and tools to EPA scientists and other environmental professionals for determining optimal environmental designs. The availability of CS in the user-friendly VSP software is expected to significantly increase the awareness and use of more cost-effective environmental sampling designs.